



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

①

D3391-025
Job Sheet 184462



Part No: D3391-025

Job Qty: 1 ea

Part Name: Aft Tube Assembly



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 10/10/18

Job Tracking No:

Due Date: 12/3/18

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG REV J SHEETS 9,10,11 IPP Rev B 06-02-07 ECN773 dwg rev. D EC IPP Rev:C 06-03-28 Update
Manuf. Instructions JLM IPP rev D 07.03.20 revF dwg EC IPP rev E 07.11.07 rev G dwg ecn 1053p EC verified
by: DD IPP Rev:F 07-11-13 ECN 1056 DD verified by: EC IPP Rev:G 08-09-10 revH as per dwg DD verified
by:EC IPP Rev:H 11.11.14 AS PER REV.I DD verified by:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea	12/3/18	12/3/18	0.00	0.00	Start Up Crosstubes		MD 12/3/18
100	Mori Seiki	1 pcs	12/3/18	12/3/18	2.49	4.17	Mori Seiki TL-40		MD 12/3/18
110	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC2-1		MD 12/3/18
112	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC5		DAS 38
120	CNC Vertical Machining	1 pcs	12/3/18	12/3/18	0.00	2.63	HAAS1-3		DTP 12/11/28
130	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC2 Machining-2		DTP 12/11/28
140	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC8 Machining-2		MD 12/11/29
150	Skidtubes	1 pcs	12/3/18	12/3/18	0.00	1.03	Skidtubes-4		MD 12/11/29
160	CNC Bend Skidtubes	1 pcs	12/3/18	12/3/18	0.00	1.33	CNC Bend Skidtube		MD 12/11/29
170	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC5		BE
180	Skidtubes	1 pcs	12/3/18	12/3/18	0.00	1.03	Skidtubes-4		
190	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC5		
200	HandFinish	1 pcs	12/3/18	12/3/18	0.00	0.58	HandFinish1		
210	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC7-2		
220	Skidtubes	1 pcs	12/3/18	12/3/18	0.00	1.41	Skidtubes-4		
230	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC5		
235	HandFinish	1 pcs	12/3/18	12/3/18	0.00	0.58	HandFinish2		
240	SprayPaint	1 pcs	12/3/18	12/3/18	0.00	0.25	Spray Paint		
242	Outsource	1 pcs	12/3/18	12/3/18			ATE003-VC		
250	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC14		
260	HandFinish	1 pcs	12/3/18	12/3/18	0.00	0.58	HandFinish4		
270	QC	1 pcs	12/3/18	12/3/18	0.00	0.00	QC5		
280	Packaging	1 pcs	12/3/18	12/3/18	0.00	0.00	Packaging3-1		
290	QC21-SA	1 Ea	12/3/18	12/3/18	0.00	0.00	QC21		

Part Op 100 - Turn as per Folio FA599 Rev: J & Dwg D3391 Rev: J ***ensure steady rest is turning true*** *****REMOVE
Descriptions: STEADY REST AND MACHINIG MARKS****

120 - 1-Machine as per Folio FA 599 Rev: J & Dwg D3391 Rev: J

140 - ***INSPECT INSIDE BORE***

150 - 1-Drill (PILOT HOLE) aft cap holes per Dwg D3391 using DT8803

160 - Form as per Dwg D3391 Using Bend Prog 3391025

180 - 1-Open Aft cap pilot hole to .208" as per Dwg D3391 2-Drill float bag holes using DT8809 as per Dwg D3391(Holes

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION	AGAINST DEPARTMENT/PROCESS					
	Rework ☐	Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐		
	Scrap ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐		
	Use-as-is ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐		
	Suspected Unapproved ☐	Large Fab ☐	Composite ☐	Supplier ☐			

Date :	Step #:	QTY Effective :	MRB (QSI042) Approval
--------	---------	-----------------	-----------------------

Description Work Order Deviation	Disposition	Completed By
		Lead hand / Supervisor Approval Verification
		QC / QA Coordinator Approval

DART Aerospace Ltd.
1270 Aberdeen Street
Newbury, ON K6A 1K7
CANADA
TEL.: 1 813 632-5200
Email: sales@dartaero.com
www.dartaero.com



Container No: S122057



Part: D3391 - 025

Job No: 184462

Serial No/Batch: S122057

Revision:

Inspector:

Exp Date:

Instructions: Various STC's

Date: 10/28/18

FAULT CATEGORY

☐ Power Loss/Surge	☐ Positioned Wrong
☐ Folio/Program	☐ Outside Dimensions
☐ Grain	☐ Over/Under tolerance
☐ Weld	☐ Part Incorrect
☐ Wrong Stock Pulled	☐ Part Lost/Missing
☐ Out of Sequence	☐ Part Moved
☐ Off-set	☐ Drawing
☐ Misabeled	☐ Finish
☐ Fit/Function	☐ Misread
☐ Misaligned/off center	☐ Turning Sequence

marked "A" Only. 3-Drill wearplate holes as per Dwg D3391 using DT8878(Mid Tube) & DT8217 Wearplate Jig . *****Do Not Open To Finished Size***** 4-Drill Wearshoe holes as per DWG D3391 using DT8939 locating from 2 previously drilled aft wearplate holes. 5-Open wearplate holes to 0.297" and c'bore as per dwg D3391 6-Open up all float bag holes to 0.328" and c'sink as per Dwg D3391. 8- Scribe batch # on fwd end
 220 - 1- Instal spacers as per dwg D3391 A/R Magnabond 6398 Batch:_____ exp. date :_____ cure time 12hrs as per QSI0015 2- Grind crossbolts flush 3- Back drill using #9 drill 4- Touchup Magnabond 5- Deburr
 235 - AND REALODINE AS PER PAR09-043
 240 - PRIME AS PER DWG AND QSI005 4.2.1.3.3
 260 - 1-Install inserts as per Dwg D3391 2-Install Aft Cap as per Dwg D3391 A/ R Sikaflex-241/-291 _____
 Sikaflex expiry date:_____ 3- INSTALL WEARPLATES AS PER DWG
 290 - 5- Detail DD, open (5) forward wearplate holes 0.375", then use DT10247 and drill holes for nutplates and c'sink.
 6-Open wearplate holes to 0.297" and c'bore as per dwg D3391. ***SIX FARTHEST AFT HOLES ONLY*** 7-Open up all float bag holes to 0.328" and c'sink as per Dwg D3391. 8-Deburr 9- Scribe batch # on fwd end

3139427

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6014-090	Aluminum Extrusion	1 Ea (1 ea)	90-Start up Operation	
D3670-4-200	Bushing	4 Ea (4 ea)	220-Skidtubes	
ALS4-1032-130	Rivnut	8 Ea (8 ea)	260-HandFinish	
ALS4-1032-225	Rivnut	4 Ea (4 ea)	260-HandFinish	
AN3C4A	Bolt	6 Ea (6 ea)	260-HandFinish	
AN3C5A	Bolt	4 Ea (4 ea)	260-HandFinish	
D2646	Aft Cap	1 Ea (1 ea)	260-HandFinish	
D3672-1	Washer, Phenolic	2 Ea (2 ea)	260-HandFinish	
D4095-047	Wearpad Aft	1 Ea (1 ea)	260-HandFinish	
D4095-049	Wearpad Aft	1 Ea (1 ea)	260-HandFinish	
MS20601-AD4W3	Rivet	12 Ea (12 ea)	260-HandFinish	
MS20601-AD4W7	Rivet	8 Ea (8 ea)	260-HandFinish	
MS21075L5	Nut Plate	10 Ea (10 ea)	260-HandFinish	
NAS1149C0332R	Washer	10 Ea (10 ea)	260-HandFinish	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D6014-090	1	17	0
220-Skidtubes	D3670-4-200	4	43	0
260-HandFinish	ALS4-1032-130	8	12,051	0
	ALS4-1032-225	4	1,843	0
	AN3C4A	6	2,406	0
	AN3C5A	4	1,815	0
	D2646	1	66	0
	D3672-1	2	968	0
	D4095-047	1	21	0
	D4095-049	1	20	0
	MS20601-AD4W3	12	877	0
	MS20601-AD4W7	8	121	0
	MS21075L5	10	304	0
	NAS1149C0332R	10	4,227	0

Part Specifications

Specifications could not be found.

Plex 10/10/18 10:12 AM Dart.lajeunesse.marie

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>184462</u> Part No. <u>D3391.025</u> NCR No. _____		DISPOSITION Rework ☐ Scrap ☒ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="width:15%;">Skid-tube ☒</td> <td style="width:15%;">Cross tube ☐</td> <td style="width:15%;">Water Jet ☐</td> <td style="width:15%;">Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>				Skid-tube ☒	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☒	Cross tube ☐	Water Jet ☐	Engineering ☐																				
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐																				
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐																				
Large Fab ☐	Composite ☐	Supplier ☐																					
Date : <u>18-11-29</u>		Step #: <u>130</u>		QTY Effective : <u>①</u>		MRB (QSI042) Approval DAS 9 9-89 <u>18-11-30</u>																	
Description Work Order Deviation				Disposition																			
counterbore section T-T was drill too deep. operator try to "fix" depth by grinding off material which result in having the overall thickness too thin and uneven surface				scrap destroy no replace make employee ^{know} that he as no authorization to do anytype of rework with out QC approval. and record in training log.																			
				Completed By <u>JY</u> <u>18-11-30</u> Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval DAS 9 9-89 <u>18-11-30</u>																			
Root Cause		FAULT CATEGORY																					
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐																		
Design ☐	Operator ☒	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐																		
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐																		
Equip/Tooling ☐	Supplier ☐	Cracks ☐	☒ Broken <u>Damage/Defect</u>	Weld ☐	Part Incorrect ☐																		
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐																		
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐																		
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐																		
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐																		
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐																		
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐																		
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____																					
Misidentified ☐	Past Due ☐																						

①

DART AEROSPACE LTD		Work Order: 184462
Description: Float Skidtube (412)		Part Number: D3391-3
Inspection Dwg: D3391	Rev: J	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

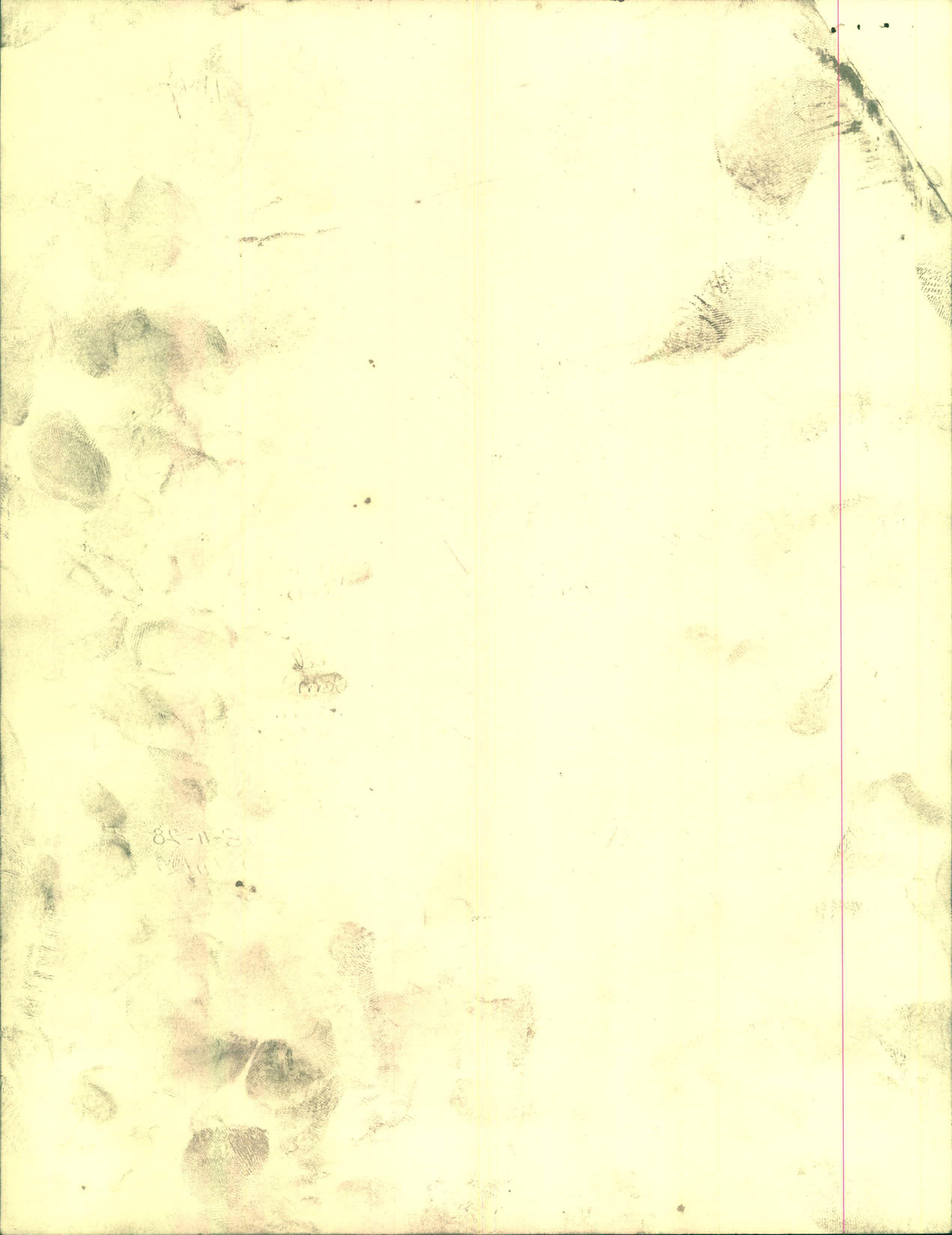
Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Lathe Section						
14.000	+/-0.010	14.000	✓		tape	
3.500	+/-0.010	3.501	✓		cnc-08	
Ø3.200	+/-0.010	3.204	✓		cnc-05	
Ø3.750	+/-0.010	3.749	✓		cnc-05	
30° x 0.060 chamfer	+/-0.010	.060	✓		cnc-08	
88.93	+/-0.030	88.92	✓		tape	

Measured by: M.S.	Date: 2018-10-25
Audited by:	Date:

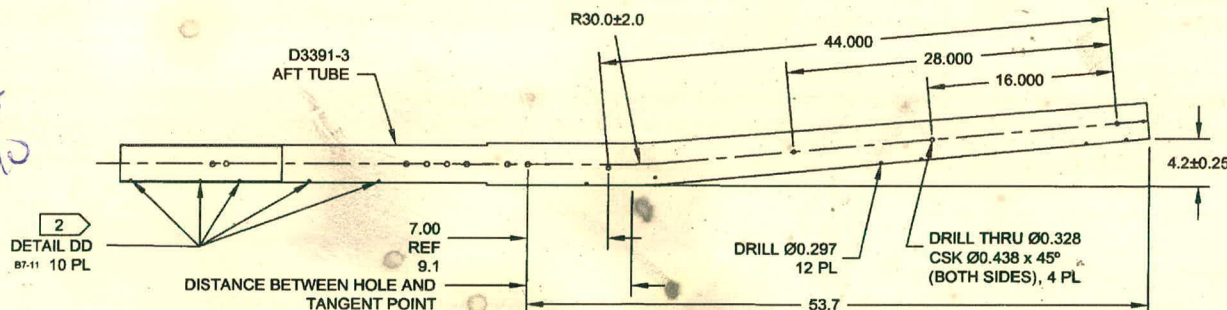
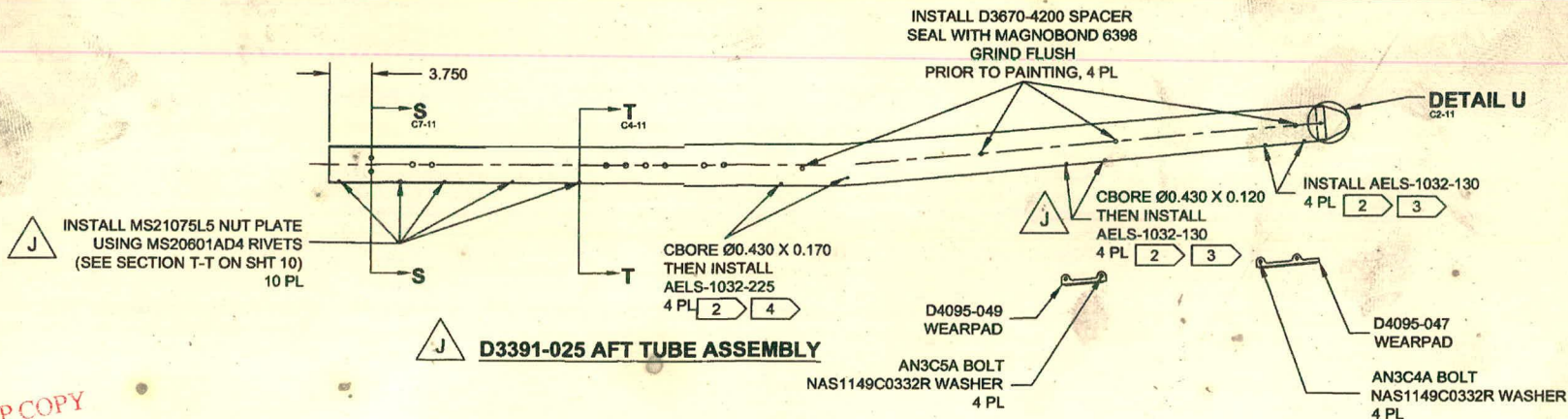
HAAS Section						
1.526	+0.000/-0.030	1.506	✓		Vern.	
7.500	+/-0.010	7.498	✓		Vern.	
27.750	+/-0.010	27.750	✓		Dial	
31.750	+/-0.010	31.750	✓		Dial	
35.250	+/-0.010	35.250	✓		Dial	
3.300	+/-0.010	3.300	✓		Vern	
0.200	+/-0.010	0.201	✓		Vern.	
3.520	+/-0.010	3.520	✓		M.M.	
0.687	+0.010/-0.000	0.689	✓		Vern.	
R0.062	+/-0.010	0.062	✓		R.G.	
Ø0.484	+0.005/-0.001	0.485	✓		G.P.	

Measured by: JIP	Date: 18-11-28
Audited by: [Signature]	Date: 18/11/29

Rev	Date	Change	Revised by	Approved
A	06.04.24	New Issue P/O D3391-015/-025	KJ/JLM	
B	06.06.19	Dwg revision update	KJ/JLM	
C	07.04.20	Ø0.208 dimension removed	KJ/JLM	
D	07.09.06	0.400 dimension removed	KJ/JLM	
E	07.11.23	Dwg Rev. updated	KJ/EC/DD	
F	09.04.27	Dimensions updated per Rev H and NCR09-028	KJ/JLM	
G	09.11.16	Dimension 0.200 removed	KJ	
H	11.06.21	Dimension 44.995 removed	KJ	
I	12.05.15	Dwg Rev updated	KJ	
J	12.05.23	Dimension updated	KJ	
K	12.10.15	88.93 dimension removed	KJ	
L	12.11.28	88.93 dimension added	KJ	
M	16.06.23	Dimensions updated per Rev J	KJ	



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WITHOUT NOTICE
WORK ORDER
NO. 189462 ML5
187070



D3391-025 AFT TUBE ASSEMBLY PARTS LIST

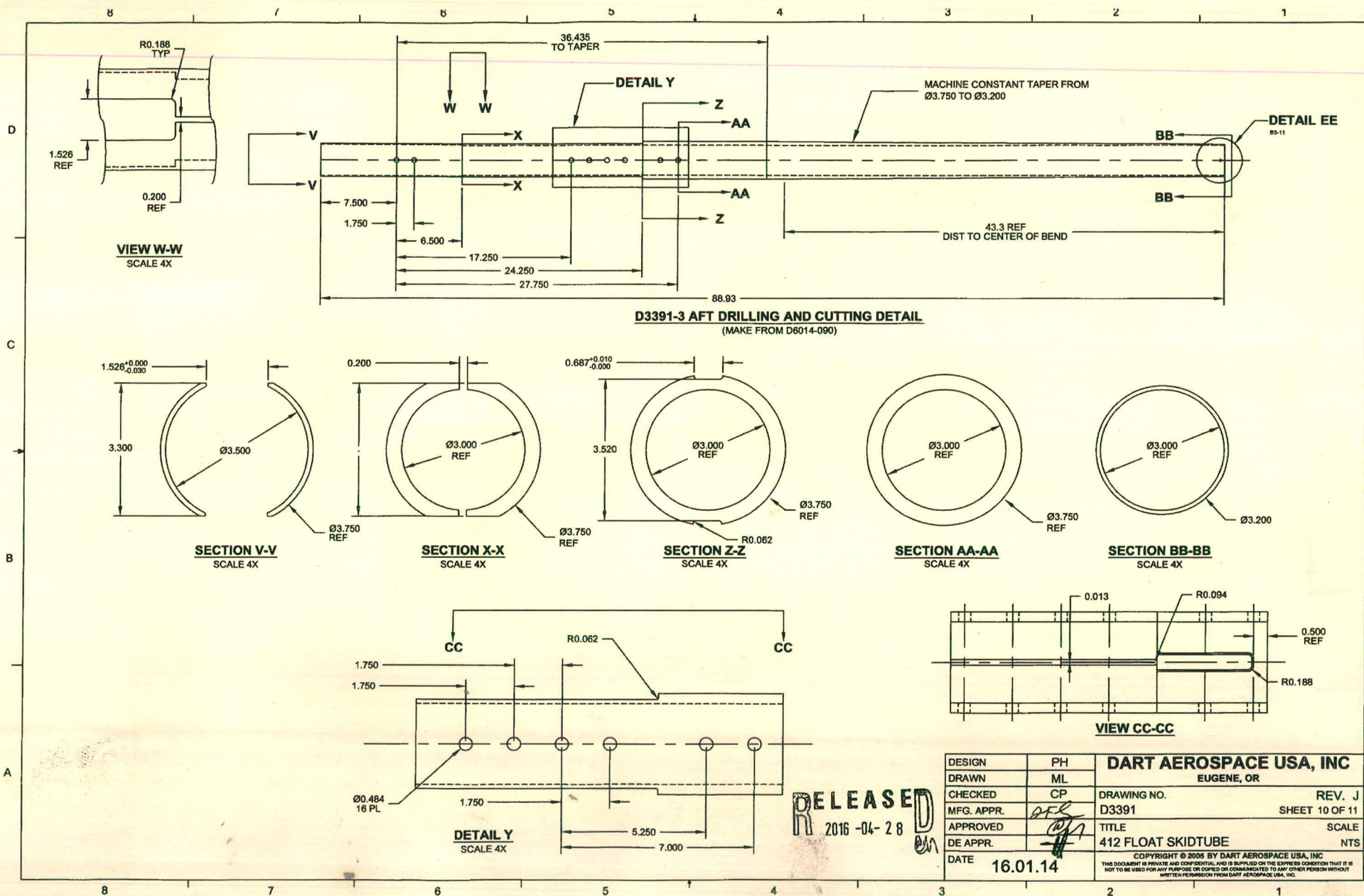
QTY -025	PART NUMBER	DESCRIPTION
X	D3391-025	AFT TUBE ASSEMBLY
1	D2646	AFT CAP
1	D3391-3	AFT TUBE
4	D3670-4200	SPACER
2	D3672-1	WASHER
1	D4095-049	WEARPAD
1	D4095-047	WEARPAD
8	AELS-1032-130	INSERT
4	AELS-1032-225	INSERT
6	AN3C4A	BOLT
4	AN3C5A	BOLT
20	MS20601AD4	RIVET, BLIND
10	MS21075L5	NUT PLATE FLOATING
10	NAS1149C0332R	WASHER

NOTES:

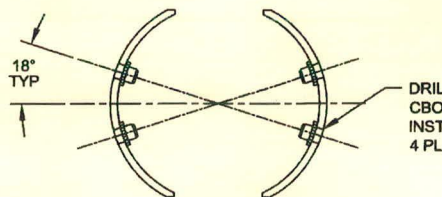
- 1) COAT ALL EXPOSED FASTENERS WITH LPS "LPS PROCYON"
- 2) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 AND Ø0.375 HOLES FOR WEARSHOE INSERTS AND NUTPLATES. CBORE AS NOTED AND INSTALL INSERT/NUTPLATES EXCEPT WHERE INDICATED. USE NUT PLATE DRILL JIG IF REQUIRED.
- 3) ENSURE WALL THICKNESS IS BETWEEN 0.070 AND 0.130 BEFORE INSTALLING INSERT
- 4) ENSURE WALL THICKNESS IS BETWEEN 0.130 AND 0.225 BEFORE INSTALLING INSERT

RELEASED
2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	SP	D3391	SHEET 9 OF 11
APPROVED	BT	TITLE	SCALE
DE APPR.	BT	AFT TUBE ASSEMBLY	NTS
DATE	16.01.14	COPYRIGHT © 2006 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC	



DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	DEF	D3391	SHEET 10 OF 11
APPROVED	CP	TITLE	SCALE
DE APPR.	CP	412 FLOAT SKIDTUBE	NTS
DATE	16.01.14	COPYRIGHT © 2005 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

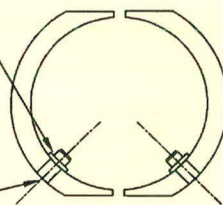


SECTION S-S
SCALE 5X

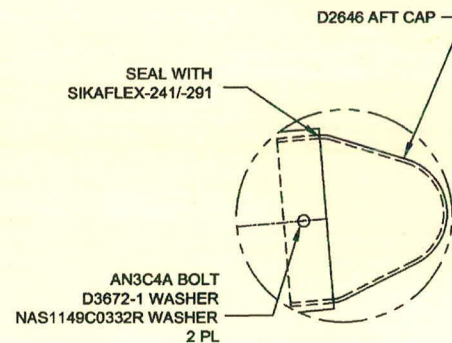
DRILL Ø0.391
CBORE Ø0.516 X 0.040 DEEP
INSTALL ALS4-428-165 INSERT
4 PL

USE DT8217 DRILL TEMPLATE
TO LOCATE HOLES AND OPEN
TO Ø0.375

MS21075L5 NUTPLATE
REF



SECTION T-T
SCALE 5X
5 PL

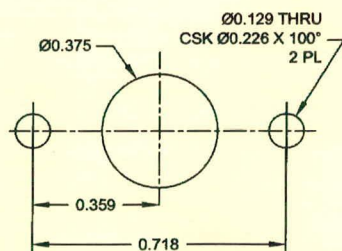


DETAIL U
SCALE 5X

SEAL WITH
SIKAFLEX-241/-291

AN3C4A BOLT
D3672-1 WASHER
NAS1149C0332R WASHER
2 PL

D2646 AFT CAP



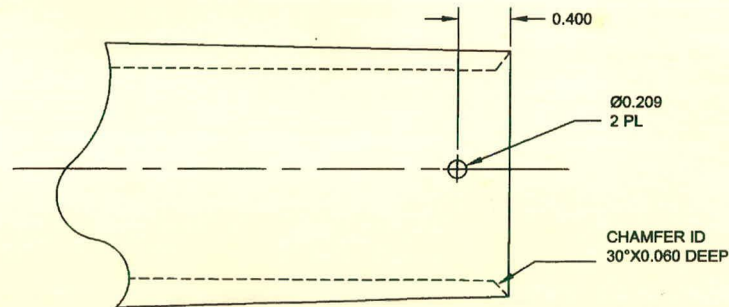
DRILLING DETAIL DD
SCALE 10X

Ø0.129 THRU
CSK Ø0.226 X 100°
2 PL

Ø0.375

0.359

0.718



DETAIL EE
SCALE 2X

Ø0.209
2 PL

CHAMFER ID
30°X0.060 DEEP

NOTES:
1) USE INDUSTRY STANDARD NUT PLATE DRILL JIG IF REQUIRED.

RELEASED
2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	YR	D3391	SHEET 11 OF 11
APPROVED	AP	TITLE	SCALE
DE APPR.	AP	AFT TUBE ASSEMBLY	NTS
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